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# **The Effect of Peer-to-Peer Tangible Donation on Users' Engagement in Online Community Platform**

*Short Paper*

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## **Abstract**

Despite the potential value of prosocial activities in enhancing user engagement in online communities, research on the relationship between prosocial activities and online community users' behavior. In this research, we examine the impact of tangible donation on online community users' engagement behaviors by using dataset from Reddit, a major online community platform. Our results indicate that, after donating, givers increase their engagement behavior by writing more posts and comments than non-givers. Furthermore, after receiving donation, receivers reduce their engagement behavior by writing fewer posts and comments than non-receivers. Our study serves as one of the first attempts to examine the role of peer-to-peer tangible donation in users' engagement behavior in online community platform, which is a novel way to help people in needs and effective way to induce user participation.

**Keywords:** Tangible donation, online community, user engagement

## **Introduction**

Over the past decades, online communities have evolved into a virtual meeting place where people share opinions, ask and answer questions, provide knowledge, form relationships, and purchase products (Tsai and Bagozzi 2014; Zhang and Zhu 2011; Chen et al. 2019; Bapna et al. 2019; Bapna et al. 2016; Zhang and Benyoucef 2016). As active participation has been acknowledged as a key to the sustainability and success of these platforms, research has focused on identifying drivers of users' participation and engagement among themselves (Ray et al. 2014; Ren et al. 2007). Interestingly, various social values related to prosocial behaviors (e.g., donation), such as warm glow and reciprocity, have been identified as the key drivers of users' participation in online community platforms (Zhang and Zhu 2011; Mustafa et al. 2022), and some online community platforms have adopted prosocial features, such as micro charity donation, as a way to encourage engagement among users (Lin and Huang 2017).

Despite the role of prosocial activities in increasing social values relevant to user engagement in online communities, there is a lack of research on the relationship between prosocial activities and online community users' engagement behavior. Most studies on the role of charity donation, for instance, focus on

crowdfunding charity platforms and examine givers' donation intent (Burtch et al. 2016; Hou et al. 2021; Liu et al. 2017; Chen et al. 2019) or donation amount (Sulaeman and Lin 2018; Fajardo et al. 2018). However, in online community platforms, where the engagement of users on both sides (givers and receivers) is equally important, examining the mechanisms of how donation enhances or hinders *engagement* of givers and receivers is crucial.

Furthermore, most studies on online charity donation are restricted to monetary donation, and platforms that facilitate tangible donation (e.g., AmazonSmile Charity Lists or The Online Food Pantry) are underexplored. Donation of tangible goods represents a unique context where motivations and behaviors of participants (i.e., givers and receivers) may be different from those of monetary donation. Compared with monetary donation, tangible donation is perceived as a more communal act in which the goods are given “noncontingently and with the recipients’ welfare in mind” (Gershon and Cryder 2018). Indeed, tangible donation is more effective than monetary donation in terms of signaling altruistic intent and bringing higher social credits, such as warm glow and self-esteem, to givers (Ellingsen and Johanneson 2011; Saha et al. 2021). Donation of tangible goods is also more effective in conveying intimacy and decreasing social distance between givers and receivers than monetary donation (Webley et al. 1983). As expectations and results of tangible goods donation are substantially different from those of monetary donation, examining its impact on online community users’ engagement behaviors would provide unique insights to not only researchers but also platform providers (James III 2018).

To address these research gaps, we focus on an online community platform that facilitates tangible donation among users. Specifically, we ask the following research question: *How does peer-to-peer tangible donation affect both givers’ and receivers’ engagement in an online community platform?*

## Theoretical Background and Hypotheses

We aim to understand how peer-to-peer tangible donation affects users’ engagement behavior by applying social exchange theory (SET) as the theoretical foundation (Blau 1964). As a theory that explains individual behaviors involved in resource exchange, SET suggests that people form relationships by conducting subjective evaluation of costs and benefits (Bagozzi 1975); That is, people engage in social interaction based on the expectation that such relationship would bring rewards. It is important to note that cost and benefit in SET are not limited to monetary values; They include time, emotional and social values, such as approval, status, and respect (Blau 1964).

In prosocial activities, helping others is regarded as a social transaction that creates social credit for givers and social debt for receivers (Chen and Gao 2021). Givers, by making donation or volunteering, may yield benefits of high esteem and “donor warmth,” an emotional reward of helping others (Saha et al. 2021). On the receiver’s side, however, receiving help from others may make receivers feel obligated to reciprocate. Indeed, Laidlaw (2000) emphasizes that receivers of gifts are obligated to reciprocate, especially when the social distance between giver and receiver is close. According to SET, both givers and receivers would behave in a way to maximize benefits and minimize costs.

Tangible donation is different from monetary donation because it is driven by communal intention (i.e., intention to help others without condition) (Gershon and Cryder 2018). Because prosocial behaviors driven by altruistic intent yield high esteem and donor warmth (Ellingsen and Johanneson 2011), the social benefits earned from their first tangible donation would encourage givers to make subsequent interactions with other users in the community. In other words, once users experience social benefits by making a tangible donation, the perceived benefits from the social relationship among users in the online community platform would increase, thereby encouraging subsequent engagement.<sup>1</sup> Therefore, we hypothesize that:

*H1: After making a peer-to-peer tangible donation, givers would engage more in the online community platform than non-givers (e.g., by writing more posts and comments).*

On the other hand, peer-to-peer tangible donation may induce costs for receivers. Compared to monetary donation, donation of goods reduces social distance and takes a form of gift-giving, in which reciprocity may act as obligation for receivers (Mauss 1954). According to SET, such obligation may act as a cost for receivers who are incapable of returning. The obligation of reciprocation stemmed from tangible donation

<sup>1</sup> According to our interview with a few RAoP givers, they prefer giving tangible goods to donating money because “money is more prone to abuse.” They also mentioned that helping directly is better than helping via charity organization because “(they) like knowing where (their) money goes.”

may thus discourage receivers from subsequent engagement with other users in the platform. Hence, we hypothesize that:

*H2: After receiving a peer-to-peer tangible donation, receivers would engage less in the online community platform than non-receivers (e.g., by writing fewer posts and comments).*

## Data and Research Methods

### Institutional Details

We collected our dataset from Reddit, one of the major online community platforms in the United States. Reddit is a popular website that consists of a collection of communities, called “subreddits”, denoted with the prefix “/r/”. Its flexible structure allows users to create, join and participate in subreddits of various topics, such as trading virtual goods or sharing information about a specific brand. It also unifies users’ experience across the platform with several ubiquitous features, such as maintaining a persistent nickname across subreddits and earning “karma scores”, which are accumulated upon users’ engagement (e.g., posting in subreddits and commenting on others’ posts).

We are specifically interested in /r/RandomActsOfPizza (RAoP), which, under the slogan of “Restoring Faith in Humanity, One Slice at a Time”, connects those who request for a pizza with those who are willing to donate one. Created in 2010, RAoP is a community with approximately 125,000 users that allows its members to donate a tangible good (i.e., pizza) to people in need. Once a user reaches 400 “karma scores”, they can ask for a pizza by writing a post, which is visible to other users in the subreddit. Another user, after seeing the post, can comment on the original post to offer a pizza. The two parties can then connect via private messaging to carry out the actual purchase. We refer to users who gave out pizzas as “givers”, those who succeeded in receiving pizzas as “receivers”, and those who did not succeed in receiving pizzas as “requesters”. Equipped with these unique features, RAoP serves as an online community platform that facilitates peer-to-peer tangible donation.

### Data Collection

To understand the impact of peer-to-peer tangible donation on users’ engagement, we obtained data of 5,131 RAoP users and their activities over 61 weeks from February 2016 to December 2017. For each RAoP user, the dataset contains the number of posts and comments they created both in RAoP and in all other subreddits that they had participated, the value of pizza donated/received, and their karma score during each week of the observation window. Among all users in our dataset, 424 are givers, 997 are receivers, and 3,710 are requesters.

### Variables and Model Specification

The dependent variables are RAoP users’ engagement activities both in RAoP and in other subreddits. Specifically, we measure two of engagement activities: number of posts and number of comments on RAoP platform. Our treatment is users’ first experience of tangible donation (i.e., giving for givers and receiving for receivers), because users experience the benefits and costs of engaging in social relationship via their first experience with tangible donation. All variables are log transformed to reduce skewness. Table 1, 2, and 3 outline descriptions, descriptive statistics, and correlation of all the variables used in this paper, respectively.

Variable	Description
$RAOPPost_{it}$	Number of posts that user $i$ wrote on RAoP subreddit in week $t$
$RAOPComment_{it}$	Number of comments that user $i$ wrote on RAoP subreddit in week $t$
$ExtPost_{it}$	Number of posts that user $i$ wrote on other subreddits in week $t$
$ExtComment_{it}$	Number of comments that user $i$ wrote on other subreddits in week $t$
$Giver_i$	1 if a user $i$ is a giver and 0 otherwise
$Receiver_i$	1 if a user $i$ is a receiver and 0 otherwise
$First_{it}$	1 if user $i$ donated (received) pizza for the first time week $t$
$CumKarmaScore_{it-1}$	Cumulative karma score of user $i$ until week $t-1$ . Karma score is calculated as the difference between upvotes and downvotes that the user $i$ has received.
$CumValue_{it-1}$	Cumulative value of donation that user $i$ gave out (received) until week $t-1$

**Table 1. Description of Variables**

Variable	Overall			Giver			Receiver		
	N	Mean	Std.Dev.	N	Mean	Std.Dev.	N	Mean	Std.Dev.
$Log(RAOPPost_{it})$	318122	0.0155	0.1118	26288	0.0137	0.1076	61814	0.0153	0.1103
$Log(RAOPComment_{it})$	318122	0.0158	0.1524	26288	0.0708	0.3677	61814	0.0315	0.19875
$Log(ExtPost_{it})$	318122	0.1868	0.4567	26288	0.2601	0.5551	61814	0.3158	0.5694
$Log(ExtComment_{it})$	318122	0.8226	1.2170	26288	1.1977	1.3811	61814	1.5263	1.3700
$Log(CumKarmaScore_{it-1})$	318122	4.5116	3.2977	26288	5.8157	3.0272	61814	6.5686	2.7039
$Log(CumValue_{it-1})$	318122	0.3230	0.9677	26288	1.3924	1.7113	61814	1.0703	1.4635

Table 2. Descriptive Statistics

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Log(RAOPPost_{it})$								
$Log(RAOPComment_{it})$	0.2998							
$Log(ExtPost_{it})$	0.0550	0.0459						
$Log(ExtComment_{it})$	0.0556	0.0710	0.5750					
$Giver_i$	0.0267	0.1069	0.0491	0.0927				
$Receiver_i$	0.0184	0.0154	0.1400	0.2846	-0.1478			
$First_{it}$	0.0081	0.0305	-0.0073	0.0081	0.0317	-0.0184		
$Log(CumKarmaScore_{it-1})$	0.0432	0.0583	0.3790	0.6191	0.1208	0.3103	0.2936	
$Log(CumValue_{it-1})$	0.0190	0.1104	0.0617	0.1521	0.3318	0.3751	0.4354	0.3106

Table 3. Correlation of Variables

To examine the effect of users' first peer-to-peer tangible donation activity on their behavior of writing posts and comments in RAoP and other subreddits, we estimated difference-in-differences (DID) specifications, separately for givers and receivers; specifically, we compare givers with non-givers (receivers and requestors) and receivers with non-receivers (givers and requestors). A user's first donation-related event, i.e., a giver's first donation and a receiver's first successful request, is considered the "treatment" in our specifications. The DID specifications are summarized as follows.

$$\log(Outcome_{it} + 1) = \beta_1(First_{it} \times Giver_i) + \beta_2 First_{it} + Control_{it} + \mu_i + \tau_t + \varepsilon_{it} \quad (1)$$

$$\log(Outcome_{it} + 1) = \beta_1(First_{it} \times Receiver_i) + \beta_2 First_{it} + Control_{it} + \mu_i + \tau_t + \varepsilon_{it} \quad (2)$$

$Outcome_{it}$  is each of the four dependent variables explained above.  $Giver_i$  is a dummy variable that takes 1 if user is a giver and 0 if otherwise.  $Receiver_i$  is a dummy variable that takes 1 if user is a receiver and 0 if otherwise.  $First_{it}$  is a dummy variable that takes 1 if week  $t$  is after user  $i$ 's first donation-related event and 0 otherwise.  $Control_{it}$  includes posts and comments written by user  $i$  in week  $t-1$ , as well as the cumulative value of donations made/received and cumulative karma score. We also included both user- and week-fixed effects, denoted as  $\mu_i$  and  $\tau_t$  respectively. As a result,  $Giver_i$  and  $Receiver_i$  are omitted during estimation.  $\varepsilon_{it}$  is the regression error term. The main parameter of interest is the coefficient of the interaction term  $\beta_1$ , which captures the treatment effect of the first donation-related event on user engagement. RAoP advises a "receiver" to show gratitude after receiving a pizza by writing a separate "Thanks" post. We excluded receivers' gratitude posts in order to more accurately measure receivers' organic engagement after receiving pizza. For the same reason, we also excluded givers' first comments on the gratitude posts (which usually acknowledge the appreciation).

## Results

### Parallel Trends Assumption

We first check the parallel trends assumption of DID specification by using a relative time model. We created additional series of time dummies that indicate the relative time difference between  $t$  and the actual treatment period (giving or receiving first pizza) to measure the effect of treatment over time. This allowed us to detect if there are any significant pretreatment trends. We used same set of control variables as our main model. The results in Table 4 indicates that, none of the pretreatment dummies ( $Relative\ Time_{t-x}$ ) in column 2 is significant. Although pre-treatment effects of column 1 are significant, they are in the opposite direction as the post-treatment effects, indicating that the observed treatment effects are unlikely a continuation of pre-treatment trends. Our results assure that the parallel trends assumption is held.

Variables	(1) Givers' Posts in RAoP Subreddit	(2) Receivers' Posts in RAoP Subreddit
<i>Rel Time</i> <sub>t-4</sub>	0.0061 (0.00555)	0.0104*** (0.00381)
<i>Rel Time</i> <sub>t-3</sub>	0.0059 (0.00546)	0.0132*** (0.00417)
<i>Rel Time</i> <sub>t-2</sub>	0.0115 (0.00752)	0.0075** (0.00371)
<i>Rel Time</i> <sub>t-1</sub>	Omitted Base Case	
<i>Rel Time</i> <sub>t0</sub>	0.0035* (0.00194)	-0.0031 (0.00214)
<i>Rel Time</i> <sub>t+1</sub>	-0.0025 (0.00866)	-0.0392*** (0.00603)
<i>Rel Time</i> <sub>t+2</sub>	0.0068 (0.00629)	0.0044 (0.00280)
<i>Rel Time</i> <sub>t+3</sub>	0.0134* (0.00735)	-0.0016 (0.00162)
<i>Number of Observations</i>	306,846	306,846
<i>Number of Users</i>	5,131	5,131
<i>R-Squared</i>	0.005	0.007

**Table 4. Relative Time Model**

\*\*\* p < 0.01; \*\* p < 0.05; \* p < 0.1. Numbers in parentheses are robust standard errors. Coefficients for control variables are dropped for brevity.

## Main Results

Table 6 shows the estimation results. As hypothesized, peer-to-peer tangible donation has opposite effects on the engagement behaviors of givers and receivers. According to columns (1) and (2), the coefficients of the interaction term between  $First_{it}$  and  $Giver_i$  are 0.0035 and 0.0237, respectively; After donating pizza for the first time, givers increased their engagement behavior by writing more posts and comments on RAoP subreddit, compared to non-givers. Furthermore, the coefficients of the interaction term between  $First_{it}$  and  $Receiver_i$  are -0.0066 and -0.0398; After receiving pizza for the first time, receivers reduced engagement behavior by writing fewer posts and comments on RAoP subreddit, compared to non-receivers. Hence, our main results support both H1 and H2.

Variables	(1) Givers' Posts	(2) Givers' Comments	(3) Receivers' Posts	(4) Receivers' Comments
$Giver_i \times First_{it}$	0.0035* (0.00190)	0.0237*** (0.00765)		
$Receiver_i \times First_{it}$			-0.0066*** (0.00244)	-0.0398*** (0.0132)
$First_{it}$	-0.0026*** (0.000689)	-0.0033* (0.00173)	-0.0025*** (0.000676)	-0.0028* (0.00158)
$\log(RAoPPost_{it-1})$	0.0206*** (0.00295)	-0.0177 (0.0173)	0.0207*** (0.00295)	-0.0173 (0.0174)
$\log(RAoPComment_{it-1})$	0.0132*** (0.00388)	0.167*** (0.0380)	0.0130*** (0.00380)	0.1660*** (0.0379)
$\log(ExtPost_{it-1})$	0.0024*** (0.000549)	0.0018* (0.000937)	0.0024*** (0.000550)	0.0018* (0.000939)
$\log(ExtComment_{it-1})$	0.0014*** (0.000252)	0.0029*** (0.000520)	0.0014*** (0.000252)	0.0029*** (0.000518)
$\log(CumKarmaScore_{it-1})$	0.0005*** (0.000119)	0.0013*** (0.000287)	0.0005*** (0.000118)	0.0013*** (0.000278)
$\log(CumValue_{it-1})$	-0.0014*** (0.000352)	-0.0017 (0.00164)	0.0003 (0.000741)	0.0089* (0.00463)
<i>Number of Observations</i>	306,846	306,846	306,846	306,846
<i>Number of Users</i>	5,131	5,131	5,131	5,131
<i>R-Squared</i>	0.005	0.057	0.005	0.058

**Table 6. Engagement in RAoP Subreddit**

\*\*\* p < 0.01; \*\* p < 0.05; \* p < 0.1. The numbers in parentheses are robust standard errors.

## Additional Analyses

### The effect of gratitude message

Our empirical estimations thus far reveal that making (receiving) peer-to-peer tangible donation has a significant and positive (negative) impact on givers' (receivers') engagement in online community platform. In this subsection, we further use the theoretical framework of SET to explore the underlying mechanisms. Based on SET, increased reward leads to active engagement in social relationship. Because philanthropic activities can be regarded as a social transaction that creates social credit for givers and social debt for receivers (Chen and Gao 2021), showing gratitude may reduce receivers' indebtedness. Therefore, we expect receivers who write gratitude posts to have more engagement activities than receivers who do not write gratitude posts.

To test this, we conducted a sub-group analysis and compared receivers who wrote gratitude posts with receivers who did not write gratitude posts. We repeated the main estimations by replacing  $Receiver_i$  with  $ThankfulReceiver_i$ , which is a dummy variable that takes 1 if a receiver wrote gratitude posts and 0 if otherwise. Our additional analyses (reported in Table 7) demonstrate that receivers who showed gratitude wrote more posts on RAoP subreddit than receivers who did not show gratitude. Our finding suggests that encouraging receivers to show gratitude to givers could be a powerful nudge to increase engagement among users in the online community platform.

Variables	(3) Thankful Receivers' RAoP Posts	(4) Thankful Receivers' External Posts
$ThankfulReceiver_i \times First_t$	0.00619*** (0.00170)	-0.0176 (0.0126)
$First_t$	-0.0176** (0.00741)	-0.0586 (0.0437)
$\log(RAoPPost_{it-1})$	0.0120 (0.00866)	0.0322 (0.0253)
$\log(RAoPComment_{it-1})$	0.0027 (0.00356)	0.0086 (0.0132)
$\log(ExtPost_{it-1})$	0.0025** (0.000995)	0.231*** (0.0136)
$\log(ExtComment_{it-1})$	0.0010** (0.000435)	0.0726*** (0.00359)
$\log(CumKarmaScore_{it-1})$	0.0004 (0.000306)	0.0188*** (0.00267)
$\log(CumValue_{it-1})$	-0.0008 (0.00235)	0.0089 (0.0147)
<i>Number of Observations</i>	59,735	59,735
<i>Number of Users</i>	997	997
<i>R-Squared</i>	0.007	0.137

**Table 7. Thanked Givers and Thankful Receivers' Engagement**

\*\*\* p < 0.01; \*\* p < 0.05; \* p < 0.1. The numbers in parentheses are robust standard errors.

### Heterogeneity between treatment and control groups

The validity of our DID estimations hinges on the assumption that treatment and control groups are similar and that the only difference between them is the treatment of the treated group members. Although the test of parallel trends supports the use of DID, we acknowledge that givers and receivers may still differ on unobserved characteristics. For instance, givers and non-givers may differ in terms of their willingness to make donation, which may cause a problem of self-selection issue. As a robustness check, we employ look-ahead propensity score matching (LA-PSM) to address not only observable differences but also time-invariant, unobserved characteristics of users (Bapna et al. 2018). In particular, we match treated users with users that will receive treatment at a later time. By choosing both treatment group and control group members from an identical set of users who would eventually be treated, we control for unobserved heterogeneity among users.

Using nearest neighbor matching with a caliper size of 0.01, we successfully matched 361 pairs of givers (881 pairs of receivers). We then conducted  $t$ -tests to compare the number of posts and comments on RAoP

subreddit written by treated and control users. The results in Table 8 are largely consistent with our main findings (except for givers' comments on RAoP subreddit).

	Treated Givers		Control Givers		<i>t</i>	<i>p</i>
	Mean	SD	Mean	SD		
<i>RAoP Posts</i>	0.0373	0.1820	0.0395	0.1520	-0.1704	0.8648
<i>RAoP Comments</i>	0.7715	6.1106	0.1497	0.9578	1.9101	0.0569
	Treated Receivers		Control Receivers		<i>t</i>	
	Mean	SD	Mean	SD		
<i>RAoP Posts</i>	0.0045	0.0239	0.0460	0.1558	-7.8279	<0.000
<i>RAoP Comments</i>	0.0360	0.1862	0.0641	0.2660	-2.5729	0.0101

**Table 8. Comparison Among Users After Matching (LA-PSM)**

### Spillover effect to other subreddits

With millions of subreddits, Reddit provides a unique research opportunity to explore the spillover effect to other platforms. In this subsection, to examine the impact of peer-to-peer tangible donation on users' engagement in other subreddits, we repeated the main DID estimations by using different outcome variables: number of posts and comments on other subreddits (*ExtPost<sub>it</sub>* and *ExtComment<sub>it</sub>*). Interestingly, according to Table 9, the positive (negative) effect of givers' (receivers') first donation activity partially spilled over to other subreddits; Givers wrote more comments on other subreddits after giving out pizza for the first time, and receivers wrote fewer comments on other subreddits after receiving pizza for the first time. Our results thus highlight the importance of understanding the impact of tangible donation on user engagement in online community platforms.

Variables	(1) Givers' Posts	(2) Givers' Comments	(3) Receivers' Posts	(4) Receivers' Comments
<i>Giver<sub>i</sub> × First<sub>t</sub></i>	0.00146 (0.0111)	0.0511** (0.0219)		
<i>Receiver<sub>i</sub> × First<sub>t</sub></i>			-0.00397 (0.00999)	-0.0505** (0.0197)
<i>First<sub>it</sub></i>	-0.0241*** (0.00339)	-0.0946*** (0.00674)	-0.0241*** (0.00340)	-0.0938*** (0.00676)
<i>log(RAoPPost<sub>it-1</sub>)</i>	0.00985 (0.00732)	0.00123 (0.0136)	0.00992 (0.00732)	0.00129 (0.0136)
<i>log(RAoPComment<sub>it-1</sub>)</i>	0.0109* (0.00628)	0.0777*** (0.0129)	0.0108* (0.00628)	0.0769*** (0.0128)
<i>log(ExtPost<sub>it-1</sub>)</i>	0.217*** (0.00920)	0.0771*** (0.00746)	0.217*** (0.00920)	0.0771*** (0.00746)
<i>log(ExtComment<sub>it-1</sub>)</i>	0.0714*** (0.00212)	0.492*** (0.00589)	0.0713*** (0.00212)	0.492*** (0.00589)
<i>log(CumKarmaScore<sub>it-1</sub>)</i>	0.0109*** (0.00108)	0.0476*** (0.00225)	0.0109*** (0.00108)	0.0476*** (0.00225)
<i>log(CumValue<sub>it-1</sub>)</i>	-0.00688*** (0.00226)	-0.0270*** (0.00472)	-0.00592** (0.00263)	-0.0113** (0.00500)
<i>Number of Observations</i>	306,846	306,846	306,846	306,846
<i>Number of Users</i>	5,131	5,131	5,131	5,131
<i>R-Squared</i>	0.116	0.304	0.116	0.304

**Table 9. Engagement in Other Subreddits**

\*\*\* p < 0.01; \*\* p < 0.05; \* p < 0.1. The numbers in parentheses are robust standard errors.

## Discussion and Future Research Direction

RAoP serves as a unique context where online community and tangible donation are combined; Users give (receive) donation to (from) another user in the platform and interact with each other (i.e., writing posts and comments). In this study, we attempted to understand the role of peer-to-peer tangible donation in givers and receivers' engagement behavior in online community platform. Based on a difference-in-difference approach with panel data regressions, we compared givers with non-givers and receivers with non-receivers, before and after their first donation activity. Our results indicate that, after donating, givers increase their engagement behavior by writing more posts and comments than non-givers, in RAoP subreddit. Furthermore, after receiving donation, receivers reduce their engagement behavior by writing fewer posts and comments than non-receivers, in both RAoP and other subreddits. Overall, our findings

are robust to several econometric challenges, such as user heterogeneity and pretreatment trends. Moreover, we conducted additional analyses to explore underlying mechanisms. Specifically, our sub-group analysis with receivers who wrote gratitude posts and receivers who did not write gratitude posts shows that receivers who reciprocated givers by showing gratitude wrote more posts on both RAoP and other subreddits.

Our study provides empirical and theoretical contributions to literature on prosocial behaviors in IS. As tangible donation differs from monetary donation in that it provides social values (Saha et al. 2021), which are crucial factors in encouraging user engagement, understanding how people give (receive) tangible donation provides an opportunity for future researchers to further explore peer-to-peer tangible donation in online community platforms. Moreover, whereas prior studies have focused on givers' donation intent (Burtch et al. 2016; Liu et al. 2017) or donated value (Sulaeman and Lin 2018; Fajardo et al. 2018), we shed light on how the donation affects users' engagement with each other in the platform. Furthermore, by identifying the effect of tangible donation on receivers' behaviors as well, we provide the insight of how users on both sides respond to their donation experience.

We also offer some important practical implications. Our finding that the positive (negative) effect of donation on givers (receivers) partially spills over to other platforms provides insights into how platform providers could utilize the peer-to-peer donation feature to enhance user engagement. Also, based on the finding that receivers who showed gratitude wrote more posts than receivers who did not show gratitude, we suggest that encouraging receivers to show gratitude could be a simple yet effective nudge to alleviate the negative impact of receiving donation.

Our study serves as one of the first attempts to examine the role of peer-to-peer tangible donation in users' engagement behavior in online community platform, which is a novel way to help people in needs and effective way to induce user participation. In order to develop this research and complete the paper, we plan to conduct the following analyses. First, several givers have also received pizza and receivers have also given pizza. While we assigned users to givers and receivers based on their first donation type, we plan to examine engagement behavior of these specific type of users. Second, although our matching approach (LA-PSM) addresses observed and unobserved user heterogeneity and resolves self-selection issue as much as possible, we have not yet conducted difference-in-difference estimation with the matched users. For the future research, we aim to identify the causal relationship by conducting more robust analyses with the matched sample.

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